

THE EFFECTS OF EXPORT CREDIT SUBSIDIES ON WESTERN
EXPORTS TO THE SOVIET BLOC(U) RAND CORP SANTA MONICA CA
K W CRANE ET AL JUN 84 RAND/N-2106-USDP
N00003-83-6-0440 5/20 5/12

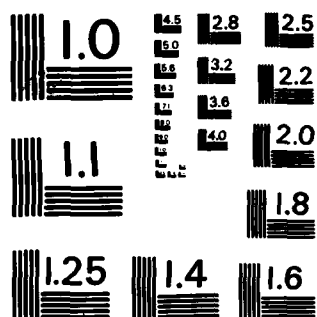
UNCLASSIFIED

MDA903-83-C-0148

F/G 5/3

NL

END



MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

(Handwritten signature)

A RAND NOTE

THE EFFECTS OF EXPORT CREDIT SUBSIDIES ON WESTERN EXPORTS TO THE SOVIET BLOC

Keith W. Crane, Daniel F. Kohler

June 1984

N-2106-USDP

Prepared for

The Office of the Under Secretary of Defense
for Policy

AD-A148 105

DTIC FILE COPY



DTIC
ELECTE
NOV 30 1984
S W A

This document has been approved
for public release and sale; its
distribution is unlimited.

84 11 29 006

The research described in this report was sponsored by the Office of the Under Secretary of Defense for Policy under Contract MDA903-83-C-0148.

The Rand Publications Series: The Report is the principal publication documenting and transmitting Rand's major research findings and final research results. The Rand Note reports other outputs of sponsored research for general distribution. Publications of The Rand Corporation do not necessarily reflect the opinions or policies of the sponsors of Rand research.

12

A RAND NOTE

THE EFFECTS OF EXPORT CREDIT SUBSIDIES ON WESTERN EXPORTS TO THE SOVIET BLOC

Keith W. Crane, Daniel F. Kohler

June 1984

N-2106-USDP

Prepared for

The Office of the Under Secretary of Defense
for Policy

DTIC
ELECTE
NOV 30 1984
A

Rand

1700 MAIN STREET
P.O. BOX 2130
SANTA MONICA, CA 90406-2130

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE(When Data Entered)

This study uses estimates of Soviet Bloc import elasticities and of the value of credit subsidies on Western loans to the Bloc in 1981 to simulate the impact on OECD exports, if these subsidies had been eliminated in that year. The elasticity estimates indicate that price changes have little bearing on the amount of hard currency spent on a particular commodity by the Soviet Bloc; own price elasticities were close to negative one, cross price elasticities were not significantly different from zero. The pattern of income or expenditure elasticities is somewhat surprising. The expenditure elasticities for food and raw materials appear to be at least as large as for machinery and other manufactured products. If subsidies had been eliminated in 1981, the total decline in OECD exports to the Bloc would have been less than 9 percent. Exports of intermediate and consumer goods, followed by machinery, would have been reduced most in absolute terms (roughly \$600 million in each category), but decreases in exports of food and raw materials would have been of roughly the same magnitude. If reductions in imports of each commodity group had been distributed proportionally among OECD suppliers, no country or country group would have experienced more than a 6 percent decline in total exports and none less than 2 percent.

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE(When Data Entered)

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER X-2106-USDP	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) The Effects of Export Credit Subsidies on Western Exports to the Soviet Bloc		5. TYPE OF REPORT & PERIOD COVERED Interim
		6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) Keith W. Crane, Daniel F. Kohler		8. CONTRACT OR GRANT NUMBER(s) MDA903-83-C-0148
9. PERFORMING ORGANIZATION NAME AND ADDRESS The Rand Corporation 1700 Main Street Santa Monica, CA. 90406		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS Under Secretary of Defense for Policy Washington, D.C. 20301		12. REPORT DATE June 1984
		13. NUMBER OF PAGES 31
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		15. SECURITY CLASS. (of this report) Unclassified
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report) Approved for Public Release: Distribution Unlimited		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report) No Restrictions		
18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) USSR International Trade Credit		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) See reverse side		

DD FORM 1473

JAN 73

EDITION OF 1 NOV 68 IS OBSOLETE

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

PREFACE

This Note is one in a series prepared for the Office of the Under Secretary of Defense for Policy. It is part of Rand's research program on international economic policy, and should be of interest to policymakers concerned with international resource flows. It provides estimates of resource flows to the Soviet Bloc resulting from Western trade policies.

Other Rand publications within the same project include:

- *Subsidization of East-West Trade Through Credit Insurance and Loan Guarantees*, by Daniel F. Kohler and Kip T. Fisher, N-1951-USDP, January 1983.
- *Incentives and Insurance in International Financial Markets*, by Daniel F. Kohler, N-2117-USDP, June 1984.
- *Export Subsidies as Instruments of Economic and Foreign Policy*, by Stephen W. Salant, N-2120-USDP, June 1984.
- *Economic Costs and Benefits of Subsidizing Western Credits to the East*, by Daniel F. Kohler, R-3129-USDP, June 1984.

These documents are designed to contribute to the current debate over international export competition and the problems of excessive debt burdens by some borrowing countries.



1A1

SUMMARY

Western governments have devoted substantial resources to providing credit subsidies for exports to Third World and Soviet Bloc countries. Despite the sums of money involved, little effort appears to have been devoted to determining the cost of these subsidies and the potential impact on exports if they were eliminated. In the interest of partially filling this gap, this study uses estimates of the value of such subsidies to the Soviet Bloc [Kohler, 1984] to simulate the impact of eliminating these subsidies on exports from the Organization of Economic Cooperation and Development (OECD) to this region in 1981.

The total subsidy is split into two types: *direct* and *indirect*. Direct subsidies exist when governments lend to other countries at interest rates below those it pays for its own funds. The difference between the discounted cost to the lending government of obtaining the money on its own capital markets and the discounted cost it charges the borrowing country for the loan equals the direct subsidy. This difference is paid by the taxpayers of the lending country. Our estimates of direct subsidies to the Bloc in 1981 total more than \$1100 million, about half of which went to the Soviet Union.

Indirect subsidies are the result of risk assumption by the exporting governments. In some instances governments extend loans at their own marginal cost of funds, so that the direct subsidy is zero, or they guarantee loans extended by private banks, enabling these institutions to offer interest rates close to government bond rates. Since the foreign borrowers typically would be considered worse credit risks than the exporting governments, they thus enjoy a subsidy by being able to borrow at the exporting government's bond rate rather than at a rate that would reflect how lenders perceive their true risk. The opportunity cost of these subsidies to the exporting economy were calculated by subtracting the discounted cost of a risk-free loan from the cost of a loan of the same size lent at rates reflecting the riskiness of the Soviet Bloc borrower. Using estimates of risk based on forfeiting discounts [Kohler, 1984], we calculate the indirect subsidy

on new loans granted to the Soviet Bloc in 1981 as one and a half billion dollars.

These figures were then employed in conjunction with import elasticities to estimate potential declines in total Soviet Bloc hard currency imports in 1981, in total and by commodity group, if loans granted in that year had not been subsidized. Due to the idiosyncrasies of Soviet-type systems (a government monopoly on foreign trade, severe problems in generating hard currency exports, etc.), the elasticities of demand for hard currency imports are calculated with respect to prices and the availability of hard currency resources, rather than national income. A linear expenditure model adapted from consumer demand theory was used. The elasticity estimates indicate that price changes have little bearing on the amount of hard currency spent on a particular commodity by the Soviet Bloc; own price elasticities were close to negative one, cross price elasticities were not significantly different from zero.

The pattern of income or expenditure elasticities is somewhat surprising. The expenditure elasticities for food and raw materials appear to be at least as large as for machinery and other manufactured products. In fact, our point estimates indicate that food and raw materials are more elastic with respect to available hard currency than manufactures, although the statistical significance of this difference is low. Nevertheless, it appears that one effect of the subsidies has been to release hard currency in the Soviet Bloc for increasing purchases of food and raw materials, a substantial part of which has been sold by non-OECD suppliers.

If subsidies had been eliminated in 1981, the total decline in Western exports to the Bloc would have been less than 5 percent. Exports of intermediate and consumer goods, followed by machinery, would have been reduced most in absolute terms (roughly \$600 million in each category), but decreases in exports of food and raw materials would have been of roughly the same magnitude. If reductions in imports of each commodity group had been distributed proportionally among OECD suppliers, no country or country group would have experienced more than a 6 percent decline in total exports and none less than 2 percent.

ACKNOWLEDGMENTS

We would like to thank Toshiya Hayashi for providing programming support and Timothy Quinn for a number of helpful comments and criticisms. We would also like to express our appreciation to Connie Moreno for assisting in the typing and editing. The authors alone are responsible for all errors and omissions.

CONTENTS

PREFACE	iii
SUMMARY	v
ACKNOWLEDGMENTS	vii
TABLES	xi
Section	
I. INTRODUCTION	1
II. ESTIMATING THE SUBSIDIES	2
Direct Subsidies	2
Indirect Subsidies	7
III. FOREIGN TRADE IN CENTRALLY PLANNED ECONOMIES	12
The Importance of Nonmarket Decisions	12
Estimating the Elasticity of Imports with Respect to Hard Currency Resources	14
IV. MEASURING THE EFFECTS OF SUBSIDIES ON EXPORTS TO THE SOVIET BLOC	18
Method of Calculation	18
Effects on the Hard Currency Imports of the Soviet Bloc ...	19
Declines in Exports to the Soviet Bloc from Particular OECD Countries	20
V. CONCLUSIONS	24
APPENDIX A. ESTIMATION PROCEDURE	25
APPENDIX B. PRICE ELASTICITY ESTIMATES	28
BIBLIOGRAPHY	31

TABLES

1.	OECD Consensus Rates	4
2.	Average Yield on Government Bonds with Maturities of One Year in Selected OECD Countries (1981)	5
3.	Direct Subsidies to the Soviet Bloc on New Loans in 1981 ...	6
4.	Indirect Subsidies to the Soviet Bloc on New Loans in 1981 .	10
5.	Credit Subsidies to the Soviet Bloc in 1981	11
6.	Estimated Elasticities of Soviet Bloc Hard Currency Imports with Respect to Hard Currency Resources	16
7.	Potential Declines in East Bloc Hard Currency Imports by Commodity	20
8.	Projected Declines in OECD Exports to the East Bloc by Commodity Group and Country--1981	21
9.	Projected Declines in OECD Exports to the Soviet Union by Commodity Group and Country--1981	22
10.	Projected Declines in OECD Exports to Eastern Europe by Commodity Group and Country--1981	23
B.1.	Parameter Estimates for Eq. (A.7)	28
B.2.	Price Elasticities and Import Shares by Commodity	30

I. INTRODUCTION

Under the standard assumptions of neoclassical trade theory, it has been shown that export subsidies are never in the general interest of the donor country, because the subsidy accrues, at least in part, to the importing country and leads to less than optimal resource allocation in the exporting country [Caves and Jones, 1981, Chap. 11]. Nevertheless, export credit subsidies have been a longstanding fixture of international trade. Policymakers have employed them to win export orders in competition with other countries and to subsidize export orders from a sector, if a fall in orders is likely to increase unemployment in that industry.

Despite the prevalence of these subsidies, little effort appears to have been expended to estimate their economic cost or what would transpire if they were eliminated. The purpose of this Note is to partially fill this gap. The Note takes two regions, the Soviet Union and Eastern Europe,¹ and estimates the likely impact on 1981 exports from the Organization of Economic Development and Cooperation (OECD) to these regions, if subsidies had been eliminated in that year.

Western governments have been very creative in the forms in which these subsidies are given; data constraints make it impossible to quantify the transfers implicit in all these forms. Therefore, the projections below are restricted to the value of direct and indirect interest rate subsidies on new Western loans granted to Eastern Europe and the Soviet Union in 1981 and the possible effects of their elimination.

¹ For the purposes of this report Eastern Europe is defined as Bulgaria, Czechoslovakia, East Germany, Hungary, Poland, and Romania.

II. ESTIMATING THE SUBSIDIES

DIRECT SUBSIDIES

The form and extent of subsidies on exports is limited by the General Agreement on Trade and Tariffs (GATT). This agreement gives the importing government the right to offset subsidies granted by the exporting government through import duties. However, if the government of the importing country has no desire to offset subsidies granted by exporters competing for the same market, GATT does little to regulate subsidies on exports. It is in this area where most of the subsidization of exports occurs today.

The Eastern Bloc is one such market. Western governments compete for sales in this market by subsidizing their exports. To stay within the letter, if not the spirit of GATT, the subsidy is usually not in the form of a rebate on the price of the good or service exported, but instead is granted through preferential borrowing terms for Eastern Bloc importers.

In some OECD countries, these subsidies are granted by special government banking institutions which are empowered to extend loans to foreign purchasers of exported goods at below market rates. Examples of such institutions are the Export-Import Bank of the United States (EXIM Bank) and the Banque Francaise pour le Commerce Extérieur (BFCE) in France. In other countries, the loans are extended by commercial banks, but the interest payments are subsidized by a direct transfer from the government to the bank. In either case, the borrower receives a *direct* subsidy from the government advancing the credit, since he pays less than the cost of the money to the lending government. This difference between the cost of the money to the lending government and the cost to the borrower comprises the *direct* export credit subsidy.

In recent years the OECD countries, primarily under pressure from the U.S. government, have been negotiating limits on the use of interest rate subsidies for export financing. The negotiations have taken place within the framework of the OECD which, unlike GATT, has no power to set up legally binding multinational treaties. Instead, these negotiations

have led to a series of "gentlemen's agreements" on minimum rates to be charged on government-backed loans to foreign purchasers of exported goods and services.

These gentlemen's agreements are nonbinding and all the OECD countries reserve the right to deviate from them to meet "competitive pressure." What little information there is available suggests that the Soviets were very skillful at exploiting this clause to obtain more favorable financing for the Yamal pipeline than the gentleman's agreement would have allowed.¹ The Metropolitan Transportation Authority of New York also used this "competitive pressure" reservation when soliciting bids for subway cars. A Canadian producer eventually won the contract by offering concessionary financing granted by the Canadian government [U.S. Treasury Department, 1982].

The consensus rates are organized in a three tier system. Countries are classified into three categories according to their per capita GNP. Low income countries are granted the most favorable rates, while high income countries get the least favorable ones. Until 6 July 1982, the Soviet Union and the entire Eastern Bloc were in the intermediate category, and thus, under the gentlemen's agreement, had access to import credits at lower rates than Western industrialized countries. Since that date, the Soviet Union along with East Germany and Czechoslovakia have been placed in the highest category; they now pay the highest consensus rates (12.15 percent on medium term loans as of July 1983). However, this rate for high income countries is still below market rates in some countries, despite a decline in this differential caused by the recent fall in worldwide interest rates.

The consensus rates for the Soviet Bloc and the time they were in force are given in Table 1. For comparison we have included the U.S. treasury bill rates for comparable time periods and maturities. The difference, and thus the direct subsidy, was quite considerable in 1981, but was even larger for some other lending countries. In Table 2 we list the average government bond rates for maturities over one year in effect in the different OECD lending countries in 1981.

¹See, for example, Crovitz [1983] and *East-West* [1983].

Table 1

OECD CONSENSUS RATES
(Finance charges in percent, p.a.)

Country Category	4/1/78-6/30/80 2-5 yr	7/1/80-11/15/81 2-5 yr	11/16/81-7/5/82 2-5 yr	7/6/82-10/15/83 2-5 yr	10/16/83-Present 2-5 yr
I	7.75	8.00	8.50	8.75	11.00
II	7.25	7.75	8.00	8.50	10.50
III	7.25	7.50	7.75	10.00	10.00
U.S. Gov. Bonds	9.33	11.39	13.72	12.92	11.34

SOURCES: U.S. Treasury Department, various memos; International Monetary Fund (IMF), International Financial Statistics, various years.

Category I (relatively rich countries) including since 7/6/82 the Soviet Union, Czechoslovakia, and East Germany, who were in category II before,

Category II (intermediate countries) including Bulgaria, Hungary, Poland, Romania, Yugoslavia and since 7/6/82 Cuba and North Korea, who were in category III before,

Category III (relatively poor countries) including China and Vietnam.

Table 2

AVERAGE YIELD ON GOVERNMENT BONDS WITH MATURITIES OF
ONE YEAR IN SELECTED OECD COUNTRIES (1981)

Country	Average Yield
Australia	13.96
Austria	10.61
Belgium	13.71
Canada	15.22
Denmark	18.92
Finland	10.20
France	15.66
Ireland	17.26
Italy	20.58
Japan	8.66
Netherlands	11.55
Norway	12.31
Portugal	16.71
Sweden	13.49
Switzerland	5.57
United Kingdom	14.74
United States	13.72
West Germany	10.38

SOURCE: IMF, International
Financial Statistics, 1981

To calculate the direct subsidy on new loans in 1981, Kohler [1984] used the OECD consensus rates to compute discounted finance charges actually paid on these loans. These costs were then subtracted from the discounted financing costs of the loans, computed as if they had been granted at rates equal to those charged on government bonds in the lending countries (see Table 2). These rates were assumed to equal the risk-free rate in the respective countries.² The result is an accurate measure of the direct interest rate subsidy, if all the officially-supported loans were indeed granted at consensus rates.³ The results of these calculations are reported in Table 3.

² The risk-free interest rate was chosen because the subsidy due to risk assumption by the exporting government is calculated separately under "indirect subsidies."

³ In some OECD countries, bond yields are below consensus rates (Japan and West Germany, for example). Loans granted by these countries

Table 3

DIRECT SUBSIDIES TO THE SOVIET BLOC ON NEW LOANS IN 1981

(In millions of dollars)

	New Obligations	Consensus Rate (Short Term)	Consensus Rate (Long Term)	Subsidy Total (P.V.) ^a
USSR	5,763.1	.080	.085	498.1
Bulgaria	219.0	.080	.085	16.4
Czechoslovakia	267.0	.080	.085	23.7
GDR ^b	1,631.0	.080	.085	94.7
Hungary	99.0	.080	.085	14.4
Poland	2,778.0	.080	.085	338.8
Romania	323.0	.080	.085	41.5
Unallocated	1,299.5	.080	.085	93.9
Total	12,379.6			1,121.5

SOURCE: Kohler [1984].

^aP.V.= present value

^bWest German loans to the GDR are not reported in this table.

Unfortunately, it is impossible to ascertain whether all the loans officially supported by OECD governments were indeed made at the consensus terms. Most OECD countries are very tight-lipped about the volume of loans subsidized in this manner, and especially about who the borrowers are. Some officially-supported loans profit only from a risk guarantee from the lending government, but are otherwise extended at "market rates." For such loans there would be no direct subsidy, only an indirect one. There is, however, evidence that some of the

are assumed to be extended at the government bond rate and thus contain no direct subsidy.

officially-supported loans, especially to the Eastern Bloc, go at rates even below consensus rates [*East-West*, 1983]. The figures given in Table 2 are based on the assumption that all officially-supported loans were made at either the consensus rates or the government bond rates, whichever was lower. They thus represent a compromise. If a large fraction of officially-supported loans were only given a government guarantee and not a direct subsidy, the total direct subsidy would of course be smaller, and if a large fraction of officially-supported loans were extended at rates below the consensus rates, then the total direct subsidy might even be larger.

INDIRECT SUBSIDIES

There are several indirect ways in which OECD governments subsidize their exports. In our calculations we consider only the most important: export credit guarantees and insurance. By providing guarantees to lenders financing export transactions, the exporting governments transfer the risks from the lenders to the taxpayer, thus enabling the former to offer their loans at lower rates.

Risks to lenders in international financial markets are usually divided into two categories: commercial risks and political risks. Commercial risks are those emanating from private debtors and include bankruptcy and fraud (delkredere risks). Political risks are all risks which are out of the control of the private debtor. They include war, civil unrest, inconvertibility of the importing country's currency, as well as all other acts by the importing government which make it impossible for the lender to receive repayment. When dealing with centrally planned economies in which enterprises are owned by the government, the decision to declare an enterprise insolvent is considered a political decision, not one dictated by the market. Consequently, commercial risks are usually subsumed under political risks.

In order to quantify the indirect subsidy, we need to know the interest rate at which the loans would have been made if the exporting government had not assumed the risk. This hypothetical question can be answered readily, if the risks are known. Given a specific risk of not receiving repayment, expressed by a probability, the interest rate can

be calculated at which the expected return of such a risky investment equals the return on a risk-free alternative. A risk-neutral lender would be indifferent between lending to the risky borrower at the higher interest rate or investing his money in risk-free assets at the lower interest rate. The riskier a borrower is perceived to be (the higher his perceived probability of nonpayment), the larger this spread is.

In international lending these risks (probabilities of nonpayment) are not well known. Nevertheless, by carefully observing transactions made without the benefit of government guarantees and by analyzing the interest rates charged on guaranteed loans where lenders have to carry some residual risk themselves, one can arrive at an estimate of the market's perceptions of risks. This is the only relevant measure of risk as far as the question of what interest rate would be charged in the absence of government guarantees is concerned. It is the aggregate market's perception of how risky a borrower is that would determine what spread over the risk-free interest rate he would have to pay.

Kohler [1984] arrives at an estimate of the market's risk perception through an analysis of private bank forfeiting rates. In a forfeiting transaction, the forfaiteur (i.e., the bank) purchases at a discount an obligation while forfeiting its right of regress on the seller (i.e., the original lender) in case of nonpayment by the obliger (i.e., the borrower). The more risky the bank considers the borrower to be, the higher the discount rate it will apply. It is possible to infer the forfaiteur's perception of risk by observing the extent to which a forfeiting discount rate for a risky borrower, e.g., Poland, exceeds the discount rate for essentially risk-free loans, e.g., U.S. government securities.

Given an estimate of the perceived risks, one can readily calculate the interest rates that a risk-neutral lender would demand from a risky borrower. By comparing the financing costs at this interest rate to the financing costs at the risk-free rate one can obtain an estimate of the indirect subsidy.

Except for loans made directly by the exporting governments, the interest rate on guaranteed loans is usually slightly greater than the yield on government bonds, because in most countries government insurance and guarantees are not free. A fee of 10 to 120 cents per

hundred dollars guaranteed is often charged by the government agency that issues the insurance and guarantees; the lenders are also often required to carry a certain fraction of the risk themselves (up to 15 percent) in the form of coinsurance. The fees collected, however, often fail to cover the actual losses of the official insurers and in most cases these fees only marginally reduce the subsidies. Nevertheless, they are accounted for in the calculation of the subsidies [Kohler, 1984].

These insurance premiums, guarantee fees, and coinsurance requirements vary from country to country. Some exporters, among them the United States, require no coinsurance on political risks. Some differentiate their fees by borrowing countries (United Kingdom, France, Japan); most do not. Furthermore, a considerable number of exporting governments consider such details confidential and publish neither the rates charged to lenders nor the coinsurance requirements. For these countries we assumed an average fee of 50 cents per hundred dollars per year and a coinsurance requirement of 5 percent. These figures roughly correspond to the average for the countries which make such data available [OECD, 1982].

Kohler's estimates, presented in Table 4, were calculated assuming fees and coinsurance requirements applied to all officially-supported loans. This almost certainly leads to an overestimate of these costs, since some loans, direct loans by governments, for example, enjoy the benefits of government backing without being subject to the fees and charges. Consequently, the estimates of the indirect subsidy are probably too low.

During the year 1981 private market perceptions of the risks associated with lending to the Soviet Bloc rose considerably (columns 2 and 4, Table 4). Accordingly, the estimate of total indirect subsidies is over 50 percent larger if we use the perceived risk probabilities from the fall of 1981 rather than from the spring. In our simulations we use the arithmetic average, which is given in the last column of Table 4.

In Table 5 we summarize the subsidy estimates we use in this Note. They are quite substantial, exceeding 2.6 billion dollars, which on a total volume of officially-supported loans of 12.4 billion amounts to

Table 4

INDIRECT SUBSIDIES TO THE SOVIET BLOC ON NEW LOANS IN 1981

(In millions of dollars)

Subsidy	Indirect Subsidy					
	New Obligations	Lower Bound Risk (%) ^a	Subsidy	Upper Bound Risk (%) ^b	Subsidy	Mean Indirect Subsidy
USSR	5,763.1	2.17	286.5	1.69	217.4	252.0
Bulgaria	219.0	3.71	22.3	3.86	23.2	22.8
Czechoslovakia	267.0	2.89	15.2	4.18	22.4	18.8
GDR ^c	1,631.0	2.89	137.8	4.30	267.6	202.7
Hungary	99.0	2.15	5.9	2.46	6.9	6.4
Poland	2,778.0	7.15	470.0	13.78	818.7	644.3
Romania	323.0	3.30	35.6	3.93	42.4	39.0
Unallocated	1,299.5	5.16 ^d	210.6	9.17 ^d	413.0	311.8
Total	12,379.6		1,183.9		1,811.6	1,497.8

SOURCE: Kohler [1984].

^aMarch 1981

^bSeptember 1981

^cWest German loans to East Germany are not included.

^dWeighted average of all East European risks.

over 20 percent. In the remainder of this Note we shall analyze how effective these resource transfers were at increasing Western exports to the Soviet Bloc.

Table 5

CREDIT SUBSIDIES TO THE SOVIET BLOC IN 1981

(In millions of dollars)

	Total Bloc	Soviet Union	Eastern Europe
Direct interest rate subsidy	1121	498	623
Indirect subsidy through risk assessment	1498	252	1246
Total subsidy	2,619	750	1869

III. FOREIGN TRADE IN CENTRALLY PLANNED ECONOMIES

THE IMPORTANCE OF NONMARKET DECISIONS

Neoclassical trade theory assumes changes in national income and relative prices are the primary determinants of import flows. Consequently, most empirical investigations of changes in import flows concentrate on the estimation of the income and price elasticities of imports [Magee, 1975]. Due to the limited role of markets in Soviet-type economies, estimation of these elasticities, especially income elasticities, must be handled with care. Since domestic currencies in Soviet-type economies are inconvertible and the state has a monopoly on foreign trade, neither consumers nor firms are permitted to freely purchase goods from abroad; planners' preferences control foreign trade flows. In other words, consumers are not at liberty to convert their domestic incomes into imports.

Planners, on the other hand, face a different problem. In Soviet-type economies, as opposed to market economies of similar size and development, a much greater share of output must be classified as nontraded goods. Due to deficiencies in marketing, technological level, and product quality, Soviet-type economies have difficulty in exporting to hard currency markets, especially since price competition, at least in manufactures, is restricted by the threat of antidumping suits, and domestic demand chronically exceeds supply. These rigidities impose binding constraints on the amount of hard currency that can be earned and thus on total expenditures on hard currency imports.

The linkage between world market price changes and trade flows is weaker in these economies than it is in the West. Foreign exchange is allocated administratively, not to the highest bidder. Importers receive quotas in the form of plan targets from the Ministry of Foreign Trade. These targets have the force of law [Holzman, 1976, p. 22]. Quotas are set in value or quantity terms. They are allocated through bargaining between the central authorities, branch ministries (which represent the final users), and foreign trade organizations which will make the actual purchase. The final allocation of the available hard

currency is determined by bargaining clout, which is a function of central preferences and enterprise management ties to their superiors.

When drawing up import targets, planners assume a fixed amount of hard currency and a set of projected world market prices. If price fluctuations differ from those forecast, planners are faced with a problem since planned expenditures and quantities diverge. One method for dealing with this problem has been to adjust quantities, up or down, so that expenditures stay at planned levels.¹

An indirect test of this model of foreign trade decisionmaking in Soviet-type economies can be made by estimating the price elasticities of import demand. If this budgeting model of the Soviet foreign trade system is correct, one would expect to find zero cross price elasticities and own price elasticities of negative one for hard currency imports in the different commodity groups. Even though bureaucrats in this model do not necessarily behave like economic agents in market economies, they reveal "price response" in the form of significant own price elasticities for commodities. These elasticities are, however, an artifact of the constraints imposed by import plan targets.

In Appendix B we present price elasticity estimates for Soviet and East European demand for imports from market economies for four commodity groups. The results strongly support the hypothesis outlined above. The estimated own price elasticities are very close to negative one and none of the cross price elasticities are significantly different from zero.

The effect of export subsidies in such an environment is very limited. A one percent increase in hard currency available to Soviet Bloc planners through Western export subsidy programs leads to a one percent increase in import volume and in hard currency expenditures. The West's net export earnings after subtracting the subsidy remain unaltered, even though more goods are shipped. In other words, the Soviet Bloc countries do not increase their imports over and above the amount of the subsidy they receive.

¹The Soviets appear to have pursued this policy in the case of exports as well. In 1982 the volume of Soviet petroleum exports was greatly increased as prices fell, presumably to maintain the planned level of hard currency export earnings.

Export subsidies can be characterized as either product-specific or general. Product-specific subsidies lower the price of a good while general subsidies increase the hard currency available to the recipient. Credit subsidies on untied bank loans are obviously general. But even subsidies on export credits extended to finance particular imports have to be considered more general than specific. Since credit transactions are handled centrally by the Foreign Trade Bank, all credit subsidies reduce the borrowing costs of this bank and thus increase the hard currency available overall. This enables the recipient to increase imports by the amount of the subsidy.

The effect of the subsidy on imports of particular commodity groups is determined by their elasticities with respect to the hard currency available. These elasticities are analogous to the income elasticities of consumer demand theory. Given that the hard currency constraint--like an income constraint--is binding, the change in overall expenditures on imports has to equal the amount of the subsidy.

ESTIMATING THE ELASTICITY OF IMPORTS WITH RESPECT TO HARD CURRENCY RESOURCES

The actual equations used to estimate these elasticities were derived from a linear expenditure system adapted from consumer demand theory. In this model hard currency receipts impose a budget constraint on purchases of hard currency imports by the country. After debt-service payments have been made, the leadership of the country allocates the remaining earnings for purchases of different types of imports. Elasticities are calculated with respect to this remainder, *hard currency resources*.²

The linear expenditure system employed has the attractive features that it is consistent with utility maximization, satisfies the adding up constraint (i.e., the expenditure shares add up to one), and leads to a system of demand equations that are linear in the parameters, even

²This model imposes the constraint that the expenditure share weighted resource elasticities sum to one. This hypothesis is, unfortunately, not directly testable since reliable data on net output and domestic resource costs are lacking. However, it is consistent with the budgeting model outlined above, which in turn is supported by the price elasticity estimates reported in Appendix B.

though the parameters are subject to some nonlinear constraints [Stone, 1954; Philips, 1974]. The model used is:

$$(1) \quad p_i M_i = p_i x_i + \beta_i (y - \sum p_i x_i)$$

where

- p_i = price of good i
- M_i = import of good i
- y = hard currency resources, and
- x_i, β_i = parameters

Samuelson has offered the interpretation that $p_i x_i$ constitutes noncompressible expenditures on a commodity and β_i equals the percentage of discretionary resources that the consumer (or planner) will spend on it [Samuelson, 1947-48]. In other words, the planner considers purchases of $p_i x_i$ essential for the operation of the economy; the β_i 's determine how he divides the remaining hard currency resources among the various commodities.

The elasticity of imports from category i with respect to hard currency resources (y) is equal to

$$\zeta_{iy} = \beta_i / w_i$$

where w_i = the share of the commodity in total expenditures. The adding up constraint requires that:

$$\sum (\zeta_{iy} \cdot w_i) = 1$$

which implies that $\sum \beta_i = 1$. This constraint is imposed by dropping one of the equations during estimation and calculating its parameters subject to the constraint.³

The parameters of the model were estimated using time series for the value of market economy exports to the Soviet Bloc by commodity group (SITC nomenclature) between 1970 and 1980 [United Nations, 1980, Special Table C]. Hungarian import price indices for hard currency

³ For further details on estimating the parameters of this demand system see Appendix A. The parameter estimates are reported in Appendix B.

imports by commodity were used as a proxy for the price data [Kuekereskedelmi Statisztikai Evkoenyv, 1977, 1981]. These price indices were chosen because a series for the whole Soviet Bloc was not available and the composition of Hungarian hard currency imports more closely reflects that of other Soviet Bloc countries than would the composition of a Western nation. The Hungarian indices for the full period were only available according to the nomenclature used by the Council of Mutual Economic Assistance (CMEA). Differences in the composition of commodity groups in the SITC and CMEA systems were judged to be insignificant at the level of aggregation used.

The estimates of resource elasticities for the various commodity groups are shown in Table 6. The common belief that the elasticity of manufactures with respect to hard currency resources is higher than that of food or raw materials is clearly refuted. In fact, our point estimates indicate the opposite. Food imports have been elastic with respect to hard currency resources for both the Soviet Union and Eastern Europe, whereas imports of manufactured goods such as machinery have been inelastic. The difference between the two elasticity estimates is

Table 6

ESTIMATED ELASTICITIES OF SOVIET BLOC HARD CURRENCY IMPORTS
WITH RESPECT TO HARD CURRENCY RESOURCES

Commodity and SITC No.	Elasticities	
	Soviet Union	Eastern Europe
Food (0-1)	1.20 (.053)	1.15 (.098)
Raw materials (2,3,5)	.92 (.183)	1.07 (.132)
Machinery (7)	.87 (.129)	.91 (.127)
Intermediate and consumer goods (6,8)	.96 (.096)	.92 (.095)

NOTE: Conditional standard errors in parentheses.

not highly significant statistically. Nevertheless, it runs contrary to the general notion that machinery imports are the first to be cut when hard currency earnings decline.

IV. MEASURING THE EFFECTS OF SUBSIDIES ON EXPORTS TO THE SOVIET BLOC

METHOD OF CALCULATION

We are now in a position to quantify the likely effects of removing export credit subsidies on Western exports to the Soviet bloc. We assume that in the event of a removal of the subsidies the importing countries would decide to reduce their imports in the same year by the discounted value of the subsidy. This assumption is justified if we also assume that Western lenders take the debt-service capacity of their borrowers into account, i.e., lenders would have been reluctant to make further loans to Eastern Europe in 1981 because future debt-service capacity would have been inadequate.

The following simulation shows how the Soviet Union and Eastern Europe would have reduced their imports in 1981 if their borrowings of hard currency had been reduced by an amount equal to the subsidies on officially-supported loans in that year. This reduction in borrowing could either stem from an importer trying to maintain his debt service burden at the same level in the face of reduced subsidies or it could be imposed by the lenders who would not permit the borrower to increase his debt service burden. Either case would result in a reduction in borrowings by an amount equal to the value of the subsidy in 1981.

We conduct this exercise for the most recent year for which data were available--1981. During that year, the Soviet Bloc, despite rescheduling by Poland, received over 12 billion dollars in officially-supported new loans. If the region would have had to borrow in the unsubsidized financial markets, it could have raised less than 10 billion dollars without substantially increasing its future debt service burden. To maintain debt service payments at the same level, the countries would have had to reduce borrowing by the amount of the subsidy, roughly \$2.6 billion. The effects of this reduction in available hard currency resources on hard currency imports are estimated in the next two subsections.

EFFECTS ON THE HARD CURRENCY IMPORTS OF THE SOVIET BLOC

Given the elasticities estimated in Sec. III and the estimate of the subsidy, the share of the decline in total hard currency imports by the Soviet Bloc for four commodity groups may be calculated. These shares are derived by multiplying the estimates of the β 's in Eq. (1) by the total decline in hard currency imports (which is assumed to equal the total value of the subsidy). The β 's represent the proportion of a decline in "discretionary" income which would be made up by reducing expenditures on the particular commodities.

What follows is a simulation of what would have happened to hard currency exports to the Soviet Bloc in 1981 if subsidies had not been granted. It is not a forecast. We postulate a scenario of "no credit subsidies in 1981" and estimate the likely volume and composition of OECD exports to the Soviet Bloc. Our results are, of course, conditioned by our assumptions and estimates.

Declines in imports originating from the OECD were estimated by multiplying the reduction in hard currency imports of these commodities by the share of the OECD in total imports of the commodity from market economies. The rationale for this is the following: export credit subsidies from one country liberate hard currency which can be spent elsewhere. If these subsidies are reduced, imports have to be reduced, but these reductions will be determined by the needs of the importing country, not by who supplies the imports.

The estimates of declines in exports are given in Table 7. Interestingly, the table indicates that the commodity groups which will suffer the greatest decline will be raw materials (which include fuels, chemicals, and other raw materials) and intermediate and consumer goods. Since substantial shares of these exports are provided by non-OECD exporters or are reexported by OECD members from non-OECD suppliers, a significant part of the subsidies appears to have gone to increasing Soviet Bloc imports from non-OECD suppliers. The smallest decline in imports would have taken place in machinery, the area toward which subsidies have traditionally been targeted and often considered the most politically-sensitive sector due to employment effects.

Table 7

POTENTIAL DECLINES IN EAST BLOC HARD CURRENCY IMPORTS BY COMMODITY

Commodity	Decline in Imports (in millions of \$'s)					
	Bloc		Soviet Union		Eastern Europe	
	Total	OECD	Total	OECD	Total	OECD
Food (0-1)	612	393	257	131	355	262
Raw materials (2,3,5)	764	488	139	93	625	395
Machinery (7)	592	589	156	155	436	434
Intermediate and consumer goods (6,8)	651	594	198	183	453	411
Total	2,619	2,064	750	562	1,869	1,502

DECLINES IN EXPORTS TO THE SOVIET BLOC
FROM PARTICULAR OECD COUNTRIES

An attempt was also made to estimate possible declines in exports for several OECD countries or country groups by commodity. These estimates are given in Tables 8 through 10.

As can be seen, the decline in the volume of OECD exports would have been small, less than 5 percent of the total in 1981. If declines in each commodity group are assumed to be distributed among the countries in proportion to their shares in OECD exports of each commodity, the Common Market would have experienced the greatest fall in percentage terms and Canada the least, but no country or country group would have experienced more than a 6 percent fall in exports and none less than 2 percent. In terms of value, elimination of the subsidies would appear to have had the greatest impact on exports of intermediate and consumer goods, followed by machinery exports. However, as the elasticity estimates show, the largest relative reductions would have taken place in food imports.

Since jobs often appear to be most closely tied to output of manufactures, export credit subsidies have generally been rationalized on the basis of preserving employment. However, if all subsidies had been eliminated, exports of manufactures (machinery plus intermediate

Table 8

PROJECTED DECLINES IN OECD EXPORTS TO THE EAST BLOC
BY COMMODITY GROUP AND COUNTRY--1981

Country	Total Exports	Total Decline	Food	Raw Materials	Machinery	Intermediate and Consumer Goods
Europe	33,524	1,656	205	407	512	532
(EEC ^a)	(19,116)	(1,008)	(140)	(264)	(317)	(287)
Canada	1,893	55	49	3	2	1
U.S.	4,261	182	126	33	18	5
Japan	4,017	134	0	22	57	55
Australia and New Zealand	1,159	37	13	23	0	1
Other ^b	54	4	1	2	1	0
Total OECD	44,908	2,064	393	488	589	594

^aEuropean Economic Community--included in the total for Europe above.

^bIncludes South Africa and omissions.

and consumer goods) would have declined by \$1183 million, 4.8 percent of total manufactured exports by the OECD to the Soviet Bloc; direct export credit subsidies, i.e., out-of-pocket costs to lending governments, alone equaled \$800 million.

Because exports are assumed to decline according to shares in total OECD exports to the Bloc, Western Europe would have borne the brunt of the decline, about 80 percent. However, a third of this would be due to decreases in food and raw material exports. Since trade statistics often fail to differentiate between reexports and exports produced in the recorded country of origin, a substantial share of these raw materials and food might have been reexports purchased in Western European commodity markets. Therefore, this fall in exports of raw materials and foods could have had a greater impact on Third World or other OECD raw materials suppliers than on European export earnings.

Table 9

PROJECTED DECLINES IN OECD EXPORTS TO THE SOVIET UNION
BY COMMODITY GROUP AND COUNTRY--1981

Country	Total Exports	Total Decline	Food	Raw Materials	Machinery	Intermediate and Consumer Goods
Europe	17,609	391	57	69	121	144
(EEC ^a)	(8,722)	(191)	(36)	(35)	(58)	(62)
Canada	1,560	31	30	1	0	0
U.S.	2,357	49	32	8	8	1
Japan	3,259	72	0	8	26	38
Australia and New Zealand	929	19	12	7	0	0
Total OECD	25,714	562	131	93	155	183

^aIncluded in the total for Europe above.

Total U.S. exports would probably have declined by about 4.3 percent. Reductions in U.S. exports would be almost exclusively confined to declines in exports of agricultural goods and raw materials; machinery exports to this area would be affected very little. Since the Soviet Bloc is of marginal importance for U.S. exporters, the elimination of export subsidies to this region would have had a minor impact on total U.S. export volume.

Table 10

PROJECTED DECLINES IN OECD EXPORTS TO EASTERN EUROPE
BY COMMODITY GROUP AND COUNTRY--1981

Country	Total Exports	Total Decline	Food	Raw Materials	Mach- inery	Intermediate and Consumer Goods
Europe	15,915	1,265	148	338	391	388
(EEC ^a)	(10,394)	(817)	(104)	(229)	(259)	(225)
Canada	333	24	19	2	2	1
U.S.	1,904	133	94	25	10	4
Japan	758	62	0	14	31	17
Australia and New Zealand	230	18	1	16	0	1
Total OECD	19,194	1,502	262	395	434	411

^aIncluded in the total for Europe above.

V. CONCLUSIONS

Both direct and indirect subsidies on export credits granted to the Soviet Bloc in 1981 were substantial--over \$2.6 billion. The Soviet Union alone received close to a third of this amount. Direct subsidies comprised a sizable share in this total, over 40 percent.

The composition of hard currency exports to the Soviet Bloc appears to depend primarily on the amount of hard currency available. As more hard currency becomes available, imports increase at different rates, with food imports increasing the most rapidly, and machinery imports the least. Own price elasticities hover around negative one for these countries. This indicates that price rises cause a decline in the quantity purchases such that total expenditures on the commodity stay the same. It is as if planners allocate a fixed amount of hard currency for purchases of particular commodities and do not adjust these amounts for changes in relative prices.

If subsidies had been eliminated in 1981, calculations in this Note indicate total OECD exports to the Bloc would have declined by less than 5 percent. None of the countries of the OECD would have experienced more than a 6 percent decline in total exports and none less than a 2 percent fall. The greatest declines in hard currency imports as a whole would have occurred in purchases of raw materials. The greatest reductions in OECD exports to the Bloc would have occurred in exports of intermediate and consumer goods, followed by machinery. Differences across commodity groups would not have been substantial, however. The total decline in these two types of manufactured exports would have been roughly \$1200 million, less than half the value of the total subsidy extended by the West.

In conclusion, the primary effect of export subsidies to the Soviet Bloc has been to provide the Bloc with increased supplies of hard currency, a substantial proportion of which is used to import food and raw materials often purchased from non-OECD suppliers. They do not appear to have contributed to an expansion of trade over and beyond the amount of the subsidy.

APPENDIX A ESTIMATION PROCEDURE

The problem with estimating Eq. (1) in the text (reproduced below), is that the γ 's are needed to estimate the β 's.

$$(A.1) \quad p_i M_i = p_i \gamma_i + \beta_i (y - \sum p_i \gamma_i)$$

In order to generate estimates of the β 's some method had to be found to calculate a proxy for supernumerary income, $y - \sum p_i \gamma_i$. This proxy was constructed by regressing nominal total hard currency imports¹ (hard currency expenditures) on nominal imports of three commodities:²

$$(A.2) \quad p_i M_i = \beta_i \cdot y$$

Equation (1) was then rewritten as:

$$(A.3) \quad M_i = \gamma_i (1-\beta_i) p_i + \gamma_j (-\beta_i) p_j + \gamma_k (-\beta_i) p_k + \gamma_l (-\beta_i) p_l$$

and the resulting set of β 's was used to create a new set of prices: $(1-\beta_i) p_i = P_i$ and $\beta_j p_j = P_j$. These prices were then stacked and regressed on the residuals from the regressions on nominal total imports in order to estimate the γ 's.

$$(A.4) \quad \begin{bmatrix} \text{res}_i \\ \text{res}_j \\ \text{res}_k \end{bmatrix} = \gamma_i \begin{bmatrix} P_i \\ p_i \\ p_i \end{bmatrix} + \gamma_j \begin{bmatrix} P_j \\ p_j \\ p_j \end{bmatrix} + \gamma_k \begin{bmatrix} P_k \\ p_k \\ p_k \end{bmatrix} + \gamma_l \begin{bmatrix} P_l \\ p_l \\ p_l \end{bmatrix}$$

¹A first-order autocorrelation was assumed for all equations except Soviet raw materials imports.

²Since the β 's must sum to one, the fourth β is predetermined.

Supernumerary income, $y - \sum p_i \gamma_i$, was then calculated using these estimates of the γ 's:

$$(A.5) \quad Y^{*1} = Y - \gamma_i p_i - \gamma_j p_j - \gamma_k p_k - \gamma_l p_l$$

Differences were then formed using Eq. (1) of the form:

$$(A.6) \quad \begin{aligned} p_i M_i - p_j M_j &= \gamma_i p_i - \gamma_j p_j + (\beta_i - \beta_j) Y^{*1} \\ p_i M_i - p_k M_k &= \gamma_i p_i - \gamma_k p_k + (\beta_i - \beta_k) Y^{*1} \\ p_i M_i - p_l M_l &= \gamma_i p_i - \gamma_l p_l + (\beta_i - \beta_l) Y^{*1} \end{aligned}$$

The fourth equation, $p_i M_i - p_k M_k$, is a linear combination of the other three and hence redundant.

These equations were stacked in the manner depicted in Eq. (7) and ordinary least squares was used to provide new estimates of the coefficients.

$$(A.7) \quad \begin{bmatrix} p_i M_i - p_j M_j \\ p_i M_i - p_k M_k \\ p_i M_i - p_l M_l \end{bmatrix} = \gamma_i \begin{bmatrix} p_i \\ p_i \\ p_i \end{bmatrix} + \gamma_j \begin{bmatrix} -p_j \\ 0 \\ 0 \end{bmatrix} + \gamma_k \begin{bmatrix} 0 \\ -p_k \\ 0 \end{bmatrix} + \gamma_l \begin{bmatrix} 0 \\ 0 \\ -p_l \end{bmatrix} \\ + \alpha_1 \begin{bmatrix} Y^{*1} \\ 0 \\ 0 \end{bmatrix} + \alpha_2 \begin{bmatrix} 0 \\ Y^{*1} \\ 0 \end{bmatrix} + \alpha_3 \begin{bmatrix} 0 \\ 0 \\ Y^{*1} \end{bmatrix}$$

These new estimates of the γ 's were then used to recalculate Y^* , supernumerary income, in Eq. (A.6) and the new estimates were used to obtain another round of estimates in Eq. (A.7). Iterations continued until estimates changed by less than 0.1 percent. This occurred after

five iterations in the case of the Soviet Union and after six iterations in the case of Eastern Europe. The elasticities given in Table 6 were then calculated from the estimates of the alphas.

The standard errors given for the elasticities in Table 5 were derived using linear transformations of the standard errors of the alphas in (A.7).

APPENDIX B PRICE ELASTICITY ESTIMATES

Table B.1 presents the estimates for the parameters of Eq. (A.7). Conditional standard errors are given in parentheses.

Table B.1
PARAMETER ESTIMATES FOR EQ. (A.7)

Parameter ^a	Soviet Union	Eastern Europe
γ_F	-1.236 (.679)	-.939 (.652)
γ_R	.141 (1.213)	-1.365 (1.320)
γ_M	.503 (1.104)	-.374 (1.124)
γ_C	-.054 (.460)	-.550 (.360)
α_1	.158 (.040)	-.145 (.044)
α_2	.135 (.034)	-.043 (.036)
α_3	.078 (.031)	-.052 (.030)
β_F	.3428	.1899
β_R	.1848	.3348
β_M	.2080	.2332
β_C	.2643	.2421
Degrees of freedom	26	26
Adjusted R squared	.724	.905
Durbin-Watson	1.232	1.314

^aFor an interpretation of these parameters, see Appendix A.

Own price and cross price elasticities were calculated from these parameter estimates using the following equations:

$$(B.1) \quad \zeta_{ii} = [(1 - \beta_i \gamma_i) p_i / p_i M_i] - 1$$

$$(B.2) \quad \zeta_{ij} = p_j (\beta_i p_j) / p_i M_i$$

The results of these calculations are given in Table B.2.

Table B.2

PRICE ELASTICITIES AND IMPORT SHARES BY COMMODITY

Soviet Union				
	Food	Raw Materials	Machinery	Intermediate and Consumer Goods
P_F	-1.168	-.009	-.032	.003
P_R	.068	-.969	-.025	.003
P_M	-.064	-.007	-.910	.002
P_C	.070	-.007	-.026	-1.007
Shares	.286	.200	.238	.276
Eastern Europe				
	Food	Raw Materials	Machinery	Intermediate and Consumer Goods
P_F	-1.282	.087	.002	.003
P_R	.061	-1.161	.002	.003
P_M	.052	.069	-1.006	.003
P_C	.053	.070	.002	-1.008
Shares	.190	.335	.233	.242

BIBLIOGRAPHY

- Caves, Richard, and Ronald Jones, *World Trade and Payments: An Introduction*, 3rd ed., Little, Brown and Co., Boston, 1981.
- Grovitz, Gordon, "Europe Pays for Its Pipe Dream," *Wall Street Journal*, 13 December 1983.
- East-West*, "Italy to Buy Soviet Gas: On What Terms?" No. 329, 20 December 1983, p. 1.
- Holzman, Franklyn D., *International Trade Under Communism: Politics and Economics*, Basic Books, New York, 1976.
- Kohler, Daniel F., *Economic Costs and Benefits of Subsidizing Western Credits to the East*, The Rand Corporation, R-3129-USDP, June 1984.
- Kulkereskedelmi Statisztikai Evkoenyv*, Koezponti Statisztikai Hivatal, Budapest, various years.
- Magee, Stephen P., "Prices, Incomes, and Foreign Trade," in Peter Kenen (ed.), *International Trade and Finance*, Cambridge University Press, Cambridge, Great Britain, 1975.
- Organization for Economic Cooperation and Development, *The Export Credit Financing Systems in OECD Member Countries*, Paris, 1982.
- Philps, Louis, *Applied Consumption Analysis*, North-Holland, Amsterdam, 1974.
- Samuelson, Paul, "Some Implications of Linearity," *Review of Economic Studies*, No. 15, 1947-48, pp. 88-90.
- Stone, J.R.N., "Linear Expenditure Systems and Demand Analysis," *Economic Journal*, No. 64, 1954, pp. 511-527.
- United Nations, *International Statistical Yearbook of Trade*, New York, 1980.
- United Nations, *Monthly Bulletin of Statistics*, New York, 1983, various issues.
- U.S. Treasury Department, *Financing of Subway Cars for the Metropolitan Transportation Authority of New York*, 13 July 1982.

END

FILMED

12-84

DTIC